

300 -302 FORMULATE TEST DATA FOR TRANSMISSION TO A PLURALITY OF **CLIENTS** 304 SEND TEST DATA TO A PLURALITY OF **CLIENTS** <u>306</u> RECEIVE RI VALUES FROM EACH OF THE CLIENTS 308 CALCULATE RATE RO AT WHICH TO SEND AN IMAGE 310 SEND AN IMAGE TO THE CLIENTS AT RATE RO DURING A FIRST MULTICAST SESSION 312 SEND AN IMAGE TO A SECOND GROUP OF CLIENTS DURING A SECOND MULTICAST SESSION AT A RATE LESS THAN RO

302 FORMULATE TEST DATA FOR TRANSMISSION TO A PLURALITY OF CLIENTS

402: ALTERNATIVE 1
OBTAIN A SELECTED PERCENTAGE OF
THE IMAGE

404: ALTERNATIVE 2
VARYING THE AMOUNT OF TEST DATA
GENERATED OR SELECTED AND SENT,
TO BALANCE RELIABILITY AND COST

406: ALTERNATIVE 3
OBTAIN A QUANTITY OF DATA OF A
SELECTED SIZE FROM THE IMAGE

408: ALTERNATIVE 4
OBTAIN DATA FROM THE IMAGE,
WHEREIN THE DATA SELECTED IS
SUFFICIENT TO RESULT IN
TRANSMISSION OVER A SELECTED
PERIOD OF TIME

304 SEND TEST DATA TO A PLURALITY OF CLIENTS

502: OPTIONAL ELEMENT 1
SEND TEST DATA TO THE PLURALITY OF
CLIENTS BY OPERATION OF A RELIABLE
MULTICAST SESSION

504: OPTIONAL ELEMENT 2
SEND AN INITIAL TRANSMISSION OF
DATA; SET A TIMER; AND SEND
ADDITIONAL DATA UNTIL THE TIMER
EXPIRES

506: OPTIONAL ELEMENT 3
SEND A PORTION OF THE IMAGE AT AN
INITIAL TRANSFER RATE

508: OPTIONAL ELEMENT 4
SEND A FIRST PORTION OF THE IMAGE
AT A FIRST RATE;
SEND A SECOND PORTION OF THE
IMAGE AT A SECOND RATE

306 RECEIVE RI VALUES FROM EACH OF THE CLIENTS

602: OPTIONAL ELEMENT 1
RECEIVE A UDP PACKET FROM EACH
OF THE PLURALITY OF CLIENTS

604: OPTIONAL ELEMENT 2
RECEIVE DATA-TRANSFER STATISTICS
FROM EACH OF THE PLURALITY OF
CLIENTS

606: OPTIONAL ELEMENT 3
SET A TIMER TO INDICATE A MAXIMUM
PERIOD OF TIME DURING WHICH TO
WAIT FOR A CLIENT RESPONSE;
RECEIVE DATA-TRANSFER STATISTICS
WITHIN THE TIME PERIOD

Docket No.: MS1-1646 US
Inventors: Xu, et. al.
Title: Multicast Transfer Rate Probe

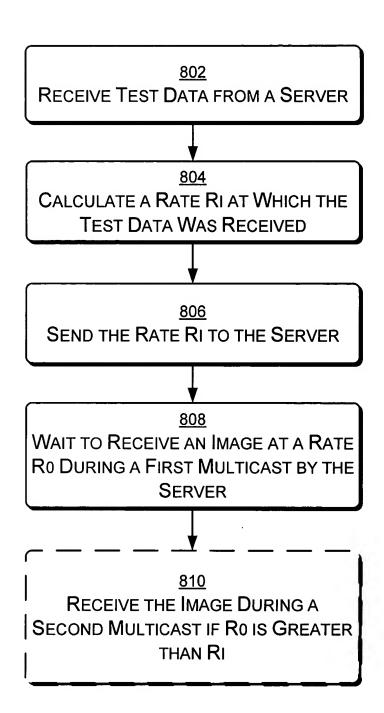
308
CALCULATE RATE R0 AT WHICH TO SEND AN IMAGE

702: ALTERNATIVE 1
SET R0 EQUAL TO THE MINIMUM RI FOR
ALL I

704: ALTERNATIVE 2
FORM AT LEAST TWO GROUPS OF
CLIENTS, BASED ON EACH CLIENT'S RI
VALUE; SELECT THE SMALLEST RI
FROM WITHIN THE AT LEAST ONE
GROUP

706: ALTERNATIVE 3
SELECT ONE OF THE RI;
SET R0 EQUAL TO THE SELECTED RI,
LESS A DE-RATING FACTOR

800



802 RECEIVE TEST DATA FROM A SERVER

902: OPTIONAL ELEMENT 1
RECEIVE A PORTION OF AN IMAGE AT
AN INITIAL TRANSFER RATE

904: OPTIONAL ELEMENT 2
RECEIVE AN INITIAL TRANSMISSION OF
TEST DATA; SET A TIMER;
RECEIVE ADDITIONAL TEST DATA UNTIL
THE TIMER EXPIRES

906: OPTIONAL ELEMENT 3
DECRYPT AND DECOMPRESS THE
RECEIVED TEST DATA;
WRITE THE DECRYPTED AND
DECOMPRESSED TEST DATA TO A DISK

804 CALCULATE A RATE RI AT WHICH THE TEST DATA WAS RECEIVED

1002: ALTERNATIVE 1
SET THE RATE RI EQUAL TO AN
AVERAGE RATE AT WHICH DATA WAS
RECEIVED

1004: ALTERNATIVE 2
SET THE RATE RI EQUAL TO AN
MINIMUM RATE AT WHICH DATA WAS
RECEIVED

1006: ALTERNATIVE 3
SET THE RATE RI AS A FUNCTION OF
THE RATE AT WHICH DATA WAS
RECEIVED ACCORDING TO A DESIRED
METHOD; DE-RATE THE RI TO A SAFER
VALUE

806 SEND THE RATE RI TO THE SERVER

1102: OPTIONAL ELEMENT 1
UTILIZE UDP PACKETS WHEN SENDING
THE RATE RI TO THE SERVER

1104: OPTIONAL ELEMENT 2
SEND TRANSFER RATE STATISTICS
INCLUDING THE RATE RI TO THE
SERVER

1202 IMAGE SERVICE STARTS SENDING OUT 1200 -DATA: RATE R IS TYPICALLY SET HIGH 1204 IMAGE SERVICE STARTS A TIMER, WHICH WHEN EXPIRES CANCELS THE DATA TRANSMISSION 1206 WHEN CLIENT RECEIVES DATA, CLIENT STARTS TIMER TO CANCEL DATA RECEPTION 1208 THE IMAGE SERVICE SENDS, AND CLIENTS RECEIVE, DATA UNTIL A TIMER EXPIRES OR A BUFFER IS **EXHAUSTED** 1210 WHEN THE CLIENT'S TIMER EXPIRES, THE CLIENT CALCULATES RECEIVING RATE, RI 1212 CLIENT SENDS RI TO SERVER AND WAITS FOR TRANSMISSION OF AN **IMAGE** 1214 THE SERVER CALCULATES A DATA

THE SERVER CALCULATES A DATA
TRANSFER RATE RO, USING THE RI, AT
WHICH TO MULTICAST AN IMAGE TO THE
CLIENTS

1216

THE SERVER THEN TRANSMITS THE IMAGE AT THE CALCULATED RATE, RO

